

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re: Robert Hahn : Attorney Docket No. D4695-00151  
Application Serial No. 10/595,290 :  
Date Filed: April 5, 2006 : Art Unit: Not Yet Known  
For: Battery, Especially A Microbattery, : Examiner: Not Yet Known  
And Production Thereof Using Wafer-  
Level Technology

**INFORMATION DISCLOSURE STATEMENT**

Commissioner For Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

*Electronically Filed*

Sir:

Pursuant to the Duty of Disclosure set forth in 37 CFR 1.56, the materials listed on the attached form PTO-1449 are hereby brought to the attention of the Examiner. Copies of the foreign patent references are attached hereto.

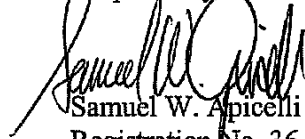
This Information Disclosure Statement is submitted prior to the mailing date of the first Office Action on the merits received by Applicants in the above-identified application.

The claimed invention is patentable over the references identified on the attached form PTO-1449. No representations are made regarding these references other than those set forth above.

No fee is believed to be due in connection with the filing of this Information Disclosure Statement. However, if the Commissioner determines that a fee is required, he is hereby authorized to charge any additional fees in connection with this matter to Deposit Account No. 04-1679.

Date:

Respectfully submitted,



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|---|-------------------------------|---------------------------------|
| Form PTO-1449 U.S. Department of<br>Commerce Patent and Trademark Office<br>INFORMATION DISCLOSURE<br>STATEMENT<br>IN AN APPLICATION<br>(Use several sheets if necessary) | Docket No.    D4695-00151     | Serial No.    10/595,290        |
|   | Applicant:    Robert Hahn     |                                 |
|   | Filing Date:    April 5, 2006 | Group Art Unit    Not Yet Known |

## U.S. PATENT DOCUMENTS

[illegible]

## FOREIGN PATENT DOCUMENTS

[illegible]

OTHER (Including Author, Title, Date, Pertinent Pages, Etc.)

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**EXAMINER:** Initial if citation considered, whether or not citation is in conformance with MPEP § 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
4 October 2001 (04.10.2001)

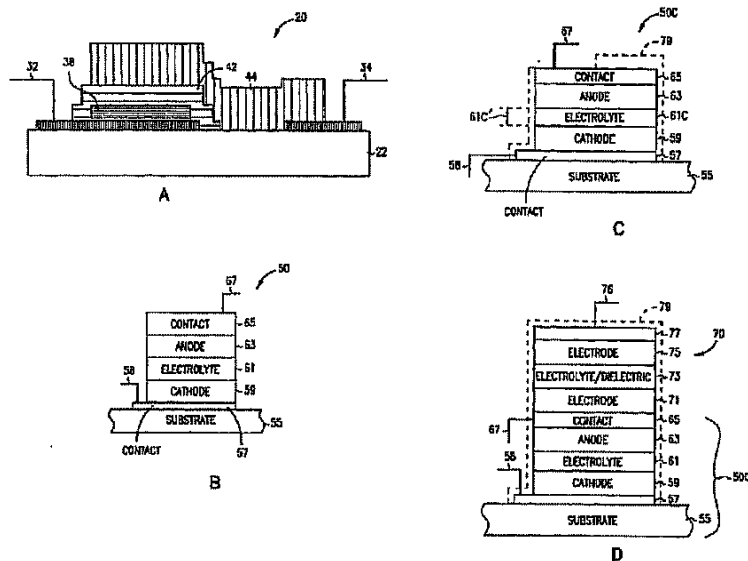
PCT

(10) International Publication Number  
**WO 01/073864 A3**

- (51) International Patent Classification<sup>7</sup>: H01M 6/18, 10/36, C23C 14/48
- (21) International Application Number: PCT/US01/09436
- (22) International Filing Date: 23 March 2001 (23.03.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/191,774 24 March 2000 (24.03.2000) US  
60/225,134 14 August 2000 (14.08.2000) US  
60/238,673 6 October 2000 (06.10.2000) US
- (71) Applicant (for all designated States except US): CYMBET CORPORATION [US/US]; 18326 Joplin St. NW, Elk River, MN 55330 (US).
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- (74) Agent: VIKSNINS, Ann, S.; Schwegman, Lundberg, Woëssner & Kluth, P.O. Box 2938, Minneapolis, MN 55402 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report
- (88) Date of publication of the international search report:  
4 July 2002

[Continued on next page]

(54) Title: THIN-FILM BATTERY HAVING ULTRA-THIN ELECTROLYTE AND ASSOCIATED METHOD



(57) Abstract: A method and system for fabricating solid-state energy-storage devices including fabrication films for devices without an anneal step. A film of an energy-storage device is fabricated by depositing a first material layer to a location on a substrate. Energy is supplied directly to the material forming the film. The energy can be in the form of energized ions of a second material. Supplying energy directly to the material and/or the film being deposited assists in controlling the growth and stoichiometry of the film. The method allows for the fabrication of ultrathin films such as electrolyte films and dielectric films.

WO 01/073864 A3



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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/09436

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01M6/18 H01M10/36 C23C14/48

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01M C23C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, COMPENDEX, PAJ, CHEM ABS Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| X          | MARTIN P J ET AL: "MODIFICATION OF THE OPTICAL AND STRUCTURAL OF DIELECTRIC ZRO2 FILMS BY ION-ASSISTED DEPOSITION" JOURNAL OF APPLIED PHYSICS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 55, no. 1, 1 January 1984 (1984-01-01), pages 235-241, XP001053666 ISSN: 0021-8979 page 235, column 1, paragraph 3 -page 236, column 1, paragraph 2 | 1,3,24                |
| X          | PATENT ABSTRACTS OF JAPAN vol. 1997, no. 03, 31 March 1997 (1997-03-31) & JP 08 293310 A (TOKYO GAS CO LTD), 5 November 1996 (1996-11-05) abstract   | 1                     |



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

### \* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

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\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

Date of the actual completion of the international search

8 April 2002

Date of mailing of the international search report

12/04/2002

Name and mailing address of the ISA

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Authorized officer

De Vos, L

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/09436

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| X          | GB 2 318 127 A (GEN VACUUM EQUIP LTD)<br>15 April 1998 (1998-04-15)<br>page 5, line 14 -page 7, line 6<br>page 8, line 9 -page 14, line 5; claims<br>1,12-31   | 1                     |
| X          | -----<br>PATENT ABSTRACTS OF JAPAN<br>vol. 1995, no. 04,<br>31 May 1995 (1995-05-31)<br>& JP 07 006933 A (MARCON ELECTRON CO<br>LTD;OTHERS: 02),<br>10 January 1995 (1995-01-10)<br>abstract   | 1                     |
| P,X        | -----<br>VEREDA F ET AL: "A study of electronic<br>shorting in IBDA-deposited Lipon films"<br>JOURNAL OF POWER SOURCES, ELSEVIER SEQUOIA<br>S.A. LAUSANNE, CH,<br>vol. 89, no. 2, August 2000 (2000-08),<br>pages 201-205, XP004201951<br>ISSN: 0378-7753<br>page 201, column 1, paragraph 1 -page 202,<br>column 1, paragraph 3 | 1-36                  |
| P,X        | -----<br>US 6 094 292 A (GEROUKI ALEXANDRA ET AL)<br>25 July 2000 (2000-07-25)<br>column 6, line 42 -column 7, line 7<br>column 10, line 29 -column 12, line 31<br>column 13, line 6 -column 14, line 23<br>column 16, line 50 -column 21, line 17;<br>claims 1,4-8,20-23  | 1-36                  |
| P,X        | -----<br>PATENT ABSTRACTS OF JAPAN<br>vol. 2000, no. 10,<br>17 November 2000 (2000-11-17)<br>& JP 2000 188113 A (TORAI ONITSUKUSU KK),<br>4 July 2000 (2000-07-04)<br>abstract   | 1,8                   |
| A          | -----<br>US 5 051 274 A (ARNTZ FLOYD O ET AL)<br>24 September 1991 (1991-09-24)<br>column 1, line 63 -column 4, line 30  | 1-3                   |
| A          | -----<br>WO 98 47196 A (LOCKHEED MARTIN ENERGY SYS<br>INC) 22 October 1998 (1998-10-22)<br>page 6, line 15 -page 7, line 5<br>page 10, line 29 -page 12, line 17; claims<br>8-16   | 1-36                  |
| A          | -----<br>PATENT ABSTRACTS OF JAPAN<br>vol. 011, no. 227 (E-526),<br>23 July 1987 (1987-07-23)<br>& JP 62 044960 A (MITSUBISHI ELECTRIC<br>CORP), 26 February 1987 (1987-02-26)<br>abstract   | 1-36                  |
|            | -----<br>-/-   |                       |

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/09436

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|------------|---|-----------------------|
| A          | <p>R.B.GOLDNER: "Ambient temperature synthesis of polycrystalline thin films of lithium cobalt oxide with controlled crystallites orientations" ELECTROCHEMICAL SOCIETY PROCEEDINGS, vol. 98-15, pages 268-273, XP008001908 page 268, paragraph 1 -page 269, paragraph 1</p> <p>-----</p> | 1-7                   |

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

## Continuation of Box I.2

Present claims 26-36 relate to an extremely large number of solid state energy storage devices (only characterized by the fact that they comprise "ions having energy greater than about 5eV"), that a lack of clarity and conciseness, within the meaning of Article 6 PCT, arises to such an extent as to render a complete meaningful search of these claims impossible.

Consequently, the search has been carried out for those parts of the application which do appear to be clear, namely to a method of fabricating an energy storage device comprising the supply of "energized particles", especially ions with energy greater than 5eV, during deposition of an electrolyte film on an electrode film, as described in claims 1-25 and to energy storage devices obtained by this method. Consequently an incomplete search has been performed for the claims 26-36.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.



# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/09436

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---|---------------------|----------------------------|---------------------|
| JP 08293310                               | A | 05-11-1996          | NONE                       |                     |
| GB 2318127                                | A | 15-04-1998          | NONE                       |                     |
| JP 07006933                               | A | 10-01-1995          | JP 3002605 B2              | 24-01-2000          |
| US 6094292                                | A | 25-07-2000          | NONE                       |                     |
| JP 2000188113                             | A | 04-07-2000          | NONE                       |                     |
| US 5051274                                | A | 24-09-1991          | US 5189550 A               | 23-02-1993          |
| WO 9847196                                | A | 22-10-1998          | AU 7145998 A               | 11-11-1998          |
|   |   |                     | US 6242132 B1              | 05-06-2001          |
|   |   |                     | WO 9847196 A1              | 22-10-1998          |
| JP 62044960 3                             | A |                     | NONE                       |                     |

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

PUBLICATION NUMBER : 01107448

PUBLICATION DATE : 25-04-89

APPLICATION DATE : 19-10-87

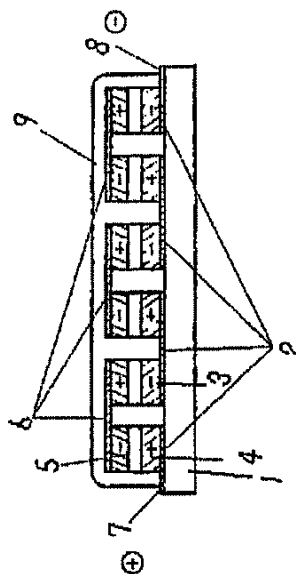
APPLICATION NUMBER : 62263459

APPLICANT : MATSUSHITA ELECTRIC IND CO LTD;

INVENTOR : TAKADA KAZUNORI;

INT.CL. : H01M 2/02 H01M 10/38

TITLE : PLANE STACK TYPE SOLID  
ELECTROLYTE BATTERY



ABSTRACT : PURPOSE: To manufacture batteries in high yield by using material having the same chemical composition as the active material of a positive electrode and a negative electrode which are adjacently placed on the same substrate.

CONSTITUTION: A positive electrode 4 and a negative electrode 3 are made of active material powder having the same chemical composition and insulating polymer elastomer, or active material having the same chemical composition, solid electrolyte powder, and insulating polymer elastomer. The solid electrolyte powder and the active material powder are mixed with a polymer solution prepared by dissolving the insulating elastomer in a specific solvent, and the mixture obtained is applied to a lead electrode 2 on a plane substrate 1, and the solvent is dried out to form the electrodes. Since the positive electrode 4 and the negative electrode 3 are made of the active material having the same chemical composition, no potential is produced between electrodes 4, 3, and in addition, the handling of electrodes or electrode material and the prevention of short circuit between electrodes 4, 3 do not require special care. Batteries are manufactured in high yield.

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